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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/711,138	11/14/2000	Yasushi Iida	063993/0108	7019

22428 7590 04/07/2003

FOLEY AND LARDNER  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER

CASTELLANO, STEPHEN J

ART UNIT	PAPER NUMBER
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3727

DATE MAILED: 04/07/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/711,138

Applicant(s)

IIDA ET AL.

Examiner

Stephen J. Castellano

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13, 24, 25, 29-31, 34-36 and 40-57 is/are pending in the application.
- 4a) Of the above claim(s) 3, 4, 10-13, 24, 25, 29-31, 36 and 41-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5-9, 34, 35 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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The finality of the action mailed November 19, 2002 is withdrawn due to the submission of a certification of translation which has overcome the rejections of record. An action follows:

Claims 3, 4, 10-13, 24, 25, 29-31, 36 and 41-57 stand withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected specie, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

Claims 1, 2, 5-9, 34, 35 and 40 are objected to because of the following informalities: The capitalization of the words "Fiber Reinforced Plastic" seem improper since it is not a proper noun. Appropriate correction is required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-9 and 34-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams.

Adams discloses a pressure vessel comprising a fiber reinforced plastic (FRP) inner shell (14) capable of serving as a gas barrier and a pressure resistant outer shell (16) provided to cover the inner shell, said outer shell is made of fiber reinforced plastic (FRP) comprising reinforcing carbon yarn fibers and a resin and of 35 GPa or more in tensile modulus and 1.5% or more in tensile breaking strain. Note that the preferred matrix material of the outer shell is VECTRAN M a thermotropic liquid crystalline polymer (LCP) which typically has a tensile modulus of greater than 35 GPa and a 2.0% or greater tensile breaking strain. Note that the carbon fiber yarn would typically have a strand tensile strength of 5.5 GPa or more and 2.0% or more in strand

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tensile breaking strain and the content of the yarn would typically have 0.30 or less in oxygen ratio at surface and 0.02 or more in nitrogen at surface.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5-9 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams in view of Shigetoh.

Adams discloses the invention except for the specific tensile modulus, tensile breaking strain, carbon yarn and the strand tensile strength and strand tensile breaking strain of the yarn and the oxygen ratio and nitrogen content of the yarn. A tensile modulus of 35 GPa and a tensile breaking strain of 2.0% or more for a resin of the outer shell is well known. Shigetoh teaches carbon fiber yarn. The strand tensile strength for carbon fiber yarn of 5.5 GPa or more and strand tensile breaking strain for carbon fiber yarn of 2.0% or more is well known. A 0.30 or less oxygen ratio at surface and 0.02 or more in nitrogen at surface for carbon fiber yarn is well known. It would have been obvious to modify the resin of the outer shell to have a tensile modulus of 35 GPa or greater and a tensile breaking strain of 2.0% or more in order to make the outer structural support layer stronger. It would have been obvious to use carbon fiber yarn because it is stronger than single strand fiber. It would have been obvious to use a carbon fiber yarn having 5.5 GPa or more strand tensile strength and 2.0% or more strand tensile breaking strain, 0.30 or less oxygen ratio at surface and 0.02 or more nitrogen at surface because this is stronger than other carbon fiber yarns. It would have been obvious to hoop wind the reinforcing

fibers in a layer within the innermost layer of the shoulder portion of the outer shell to reduce hoop stress in the outer shell.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adams in view of Gorcey.

Adams discloses the invention except for the boss, seal ring and pressing means. Gorcey teaches a pressure vessel having an inner shell (liner 11 and secondary boss 19) comprising a neck portion (secondary boss 19), inside which a boss (12) for nozzle installation is provided, and a seal ring (20) is fitted on the end face of the neck portion (19) around the boss (12), and a pressing means (nut 22) is provided for pressing the seal ring toward the end face of the neck portion. It would have been obvious to add the boss, seal ring and pressing means in order to prevent leakage between the boss and the neck portion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Castellano whose telephone number is 703-308-1035. The examiner can normally be reached on M-Th 6:30-5.

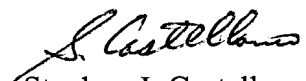
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lee W. Young can be reached on 703-308-2572. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9302 for regular communications and 703-872-9303 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

  
Stephen J. Castellano  
Primary Examiner  
Art Unit 3727

sjc  
March 26, 2003